NOTES ON PERUVIAN PALMS[1]

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ABSTRACT

Three new species of Peruvian palms are described: *Wettinia longipetala* A. Gentry, *Chamaedorea megaphylla* A. Gentry, and *Chamaedorea smithii* A. Gentry. In addition, the genus *Dictyocaryum* is reported from Peru for the first time, and new combinations are proposed for *Geonoma trigona* (Ruiz & Pavon) A. Gentry, *Chamaedorea poeppigiana* (Mart.) A. Gentry, and *Chamaedorea latisecta* (H. Moore) A. Gentry.

Palms are notorious for their taxonomic difficulty, due in large part to their size and consequent unwieldiness as herbarium specimens. Nevertheless, enough recent Peruvian palm collections have been generated by the re-activated Flora of Peru project (see Gentry, 1980) to begin to bring order out of their taxonomic near chaos. Each of the new species (plus two newly rediscovered species) described here is an important component of one of the specialized local vegetation types so characteristic of the interrupted system of parallel ridges that comprise the eastern slope of the central Peruvian Andes, yet none of them had been collected when Macbride (1960) wrote his "Flora of Peru" treatment. Since some of these vegetation types are highly endangered, the palms described here are of more than passing significance to conservation. That most of these species are among the commonest and most obvious plants in their particular type of forest emphasizes the inadequacy of floristic knowledge of the complex Amazonian/Andean interface in Peru, a lack that will soon be permanent if destruction of these habitats continues at current rates.

Dictyocaryum H. Wendl., Bonplandia 8: 106. 1860; ampl. Bot. Zeitung (Berlin) 21: 131. 1863.

Dictyocaryum lamarckianum (Mart.) H. Wendl., Bot. Zeitung (Berlin) 21: 131. 1863. *Iriartea lamarckiana* Mart., Hist. Nat. Palm. 3(7): 190. 1838. TYPE: Bolivia. Río Beni-Mamore watershed, *d'Orbigny s.n.* (not seen). Martius, Palm. Orbign. 18. t. 12: fig. 2. t. 20A. 1847.

Tree 10–25 m tall, 12–29 cm dbh, the trunk smooth, with faint leaf scars and no central swelling, the dense cone of stilt roots to 1 m tall, the crown shaft 1 m tall, green, abruptly swollen basally. Leaves 4–6, pinnately compound, 3–3.5 m long, with a petiole 50 cm long, the leaflets 26–35 per side, opposite to subopposite, each splitting fan-like into ca. 10 stiff laciniae held in different planes and conspicuously whitish below from a waxy coating. Inflorescence ca. 2 m long, erect in bud and at anthesis, in bud ca. 2 m long with 5 primary bracts and 3 bract scars, the 4 closed bracts rupturing with growth, the innermost subwoody and puberulous externally with rather flattened basally swollen trichomes, these largely caducous except the scale-like base, the inflorescence pyramidally paniculate, with ca. 45–50 erectly subhorizontal secondary axes, these mostly 3–4-branched ca. 7–15 cm from base, at maturity downcurving from the central axis from the weight of the fruit, near apex only staminate flowers, with pistillate flowers intermixed in triads with pairs of staminate flowers on basal 60%, the flowers white to yellowish, the male with 6 stamens. Fruit ovoid, 2–2.5 cm long when fresh, deep green.

Additional specimens examined. PERU. PASCO: Provincia Oxapampa, 20 km W of Oxapampa on road to Paucartambo, 1,970 m (75°28′W, 10°35′S), *Smith & Pretel 1655*; Oxapampa, 1,860 m (75°21′W, 10°34′S), *Smith & Brack 2941*; Oxapampa–Cerro de Pasco road, 20 km W of Oxapampa, 1,980–2,000 m, lower montane forest on steep slopes dominated by *Dictyocaryum*, ca. 10°45′S, 75°50′W, *Gentry, Smith, Vasquez & León 39921*. SAN MARTIN: Rioja Provincia, Campamento Garcia, km 384.5 Olmos–Moyobamba road, 2,250 m (77°21′W, 5°45′S), *Smith 4841* (all MO, USM, and to be distributed).

Although this is the first record of *Dictyocaryum* for Peru, the species described above is the absolute dominant in an interrupted band of montane forest that extends along much of the

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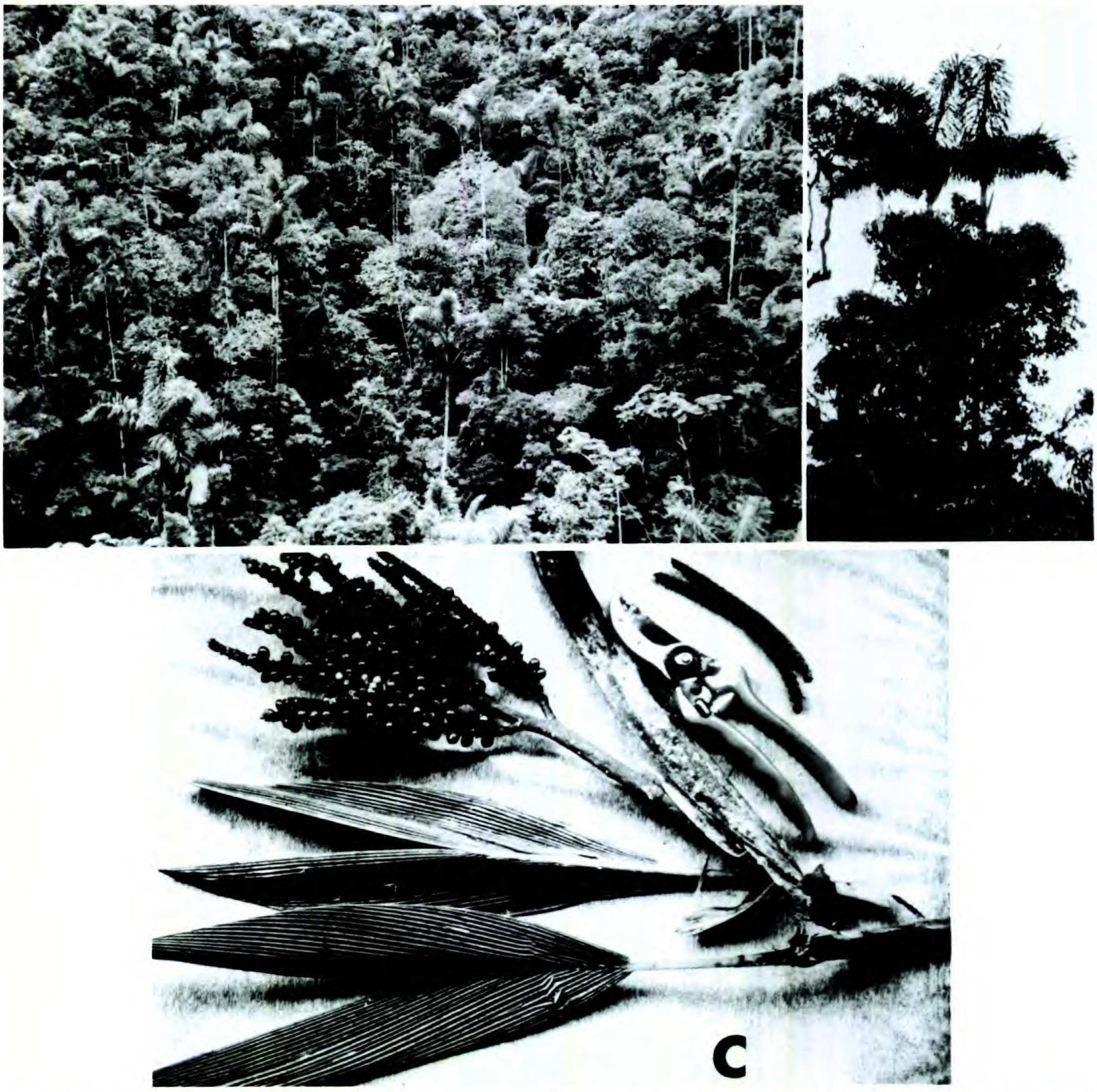

FIGURE 1. *Dictyocaryum* and *Geonoma*.—A. *D. lamarckianum* dominated forest at 1,900 m on Oxapampa-Cerro de Pasco road, 20 km W of Oxapampa; all palms in picture are *Dictyocaryum*.—B. Close view of pair of *D. lamarckianum* trees showing upright preanthesis inflorescence and suberect openly paniculate fruiting inflorescence.—C. *G. trigona*, fruiting inflorescence and leaves (the pruning shears are 22 cm long), *Gentry, Smith, Vasquez & León 40003* (MO).

eastern face of the Cordillera Oriental, mostly between 1,800 and 2,200 m altitude (Fig. 1A, B). It is known locally as "basanco" (Oxapampa) and "pona" (San Martin). In Burret's (1930) synopsis of *Dictyocaryum*, two Colombian species were recognized as well as one each from Bolivia and Venezuela. Subsequently two additional species of *Dictyocaryum* have been described, including *D. superbum* Bur. from southeastern Ecuador (Burret, 1940). The very incompletely described Ecuadorian species occurs at lower altitudes (1,200–1,400 m) and is thus unlikely, on phytogeographic grounds, to be conspecific with the Peruvian plant. Although identification of the Peruvian plant as conspecific with Bolivian *D. lamarckianum*, which also occurs at somewhat lower altitudes, is rather tentative, the Bolivian and Peruvian populations surely look the same in the field. In Bolivia, *Dictyocaryum* occurs mostly at somewhat lower altitudes [1,500–1,600 m; *Gentry & Solomon 44470* (MO) from La Paz Department, 4 km above Incahuara, 13.5 km above San Pedro, bosque pluvial subtropical sensu Holdridge, 67°35′W, 15°55′S]. Although

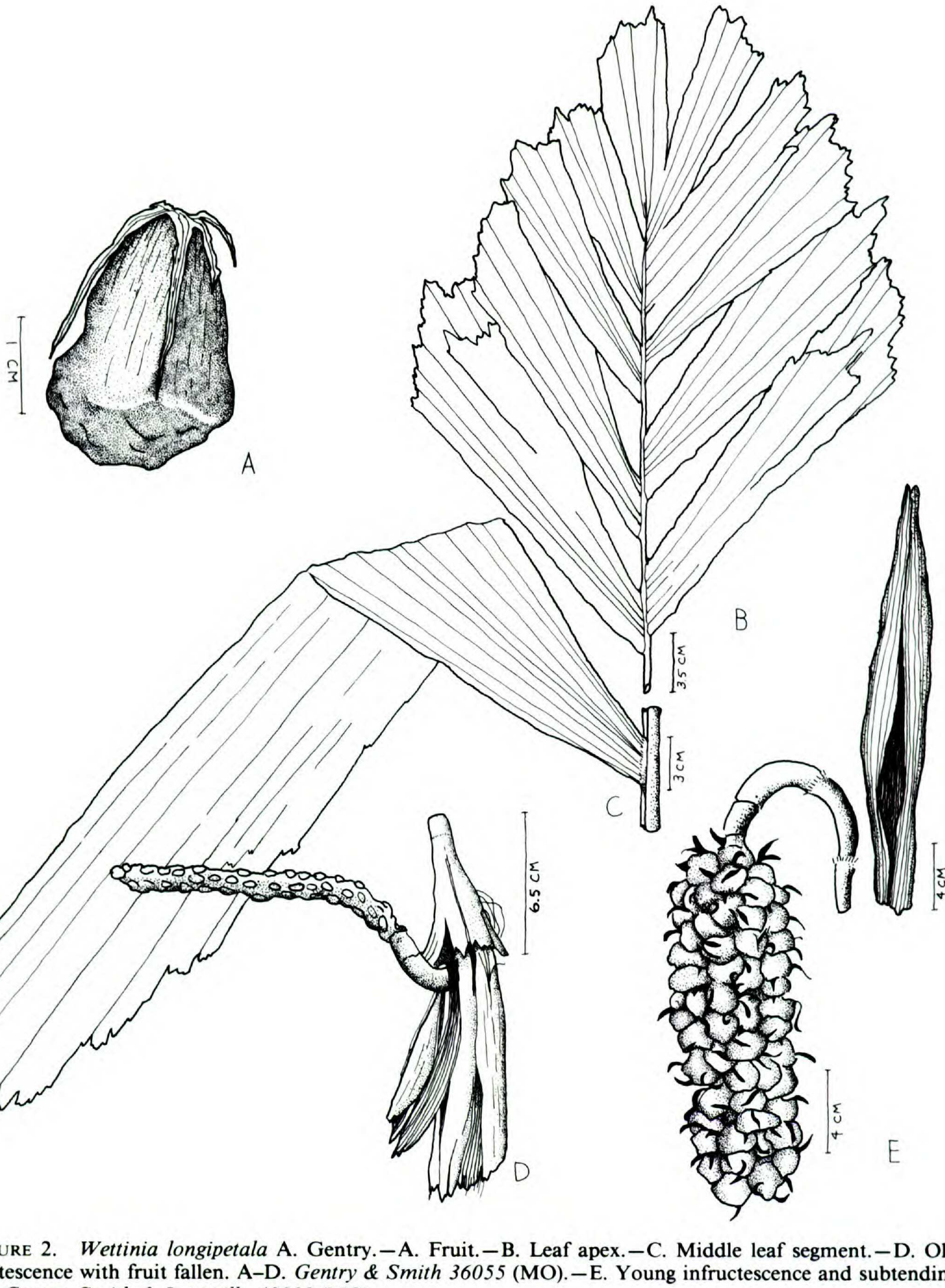

FIGURE 2. *Wettinia longipetala* A. Gentry.—A. Fruit.—B. Leaf apex.—C. Middle leaf segment.—D. Old infructescence with fruit fallen. A–D. *Gentry & Smith 36055* (MO).—E. Young infructescence and subtending bract, *Gentry, Smith & Jaramillo 42009* (MO).

less dominant than in Peru, the Bolivian plant also is an extremely conspicuous component of its habitat with eight individuals occurring in a 1,000 m² sample area near Incahuara, where it was the seventh commonest species.

Wettinia longipetala A. Gentry, sp. nov. TYPE: Peru. Pasco: Province Oxapampa, Serrania de San Matías W of Puerto Bermudez, near top of fila, 900–1,050 m, ridgetop thicket with lowland tree species, 10°25′S, 74°58′W, 15 June 1983, *Gentry, Smith & Jaramillo 42009* (holotype, MO; isotypes, MO, USM). Figure 2.

Caulis singulis. Pinnae foliorum indivisae. Inflorescentia non ramosa, floribus dense aggregatis, petalis florum femineorum (in fructu) 2–3 cm longis. Fructus trichomatibus curtis rigidis dense obtectus. Planta floribus femineis petalis longissimis a omnibus speciebus bene distincta.

Single-stemmed tree ca. 6 m tall with stilt roots at base. Leaves ca. 4 m long with ca. 30 leaflets on each side, the leaflets evenly arranged, undivided, subopposite at base, alternate at apex, to 50 cm long, broader (to 9 cm across) toward the asymmetrically praemorse apex, gradually and uniformly contracted to the 2–3 cm wide base, with numerous (mostly 10–12) uniformly thickened main veins, these tannish below, the surface puberulous below with numerous short, flat, suberect reddish trichomes, above with similar trichomes, but glabrescent, the rachis sharply angled above, rounded below, densely covered with flat appressed scale-like brownish trichomes, scabridulous. Inflorescences erect in bud, arising from an extended section of top of trunk, with ca. 4 bracts, the longest to 20–25 cm long, the outer bracts longitudinally striate, puberulous with appressed reddish trichomes, more or less glabrescent, the peduncle ca. 10–15 cm long, more or less rufescent with short erect trichomes, the single spike ca. 13–15 cm long, the petals of the female flowers (in fruit) longitudinally striate, linear, 2–3 cm long and 2–3 mm wide, exceeding the fruit, the sepals triangular, 5–7 mm long. Fruit densely appressed on the rachis, angular-obconical, densely scabridulous-rufescent with short reddish trichomes, ca. 2.5 cm long at maturity, subtended by the persistent tepals, the persistent linear style ca. 1 cm long.

This species is a distinctive and characteristic element of the ridgetop bamboo thickets of the Serrania de San Matías between the Ríos Pichis and Palcazu, a zone characterized as premontane rain forest under the Holdridge system. Further southwest, toward Villa Rica, it occurs at slightly lower altitudes (down to 700 m) on the steep slopes along the upper Palcazu tributaries.

Additional specimen examined. PERU. PASCO: drainage of Río Palcazu between km 51 and 60 of the new road in construction NW of Villa Rica toward Puerto Bermudez, 700 m, wet tropical forest in steep foothills, 10°30′S, 75°5′W, 4 Mar. 1982, *Gentry & Smith 36055* (MO).

This species is remarkable in the genus for the extremely long petals of its pistillate flowers, much longer than in any other species of the genus and at least twice as long as in any of the related single-spiked species. In Moore and Dransfield's (1978) treatment it keys out with *Wettinia augusta* Pavon & E. That species (as represented by four Peruvian collections, including topotypic material, at MO) differs, in addition to the much shorter petals, in having densely villous fruits. The short, rather scabrous, fruit indumentum of *W. longipetala* is highly unusual in subgenus *Wettinia* and more like that of some species of subgenus *Wettiniicarpus*. In Peru the two species are also ecologically separated, with *W. augusta* occurring at lower elevations (below 500 m) in tropical moist forest; the much commoner *W. maynensis* Spruce, which is very different in its branched inflorescences, occurs from the Amazonian lowlands to over 1,500 m, thus spanning the altitudinal range of both *W. longipetala* and *W. augusta*.

Geonoma trigona (Ruiz & Pavon) A. Gentry, comb. nov. *Carludovica trigona* Ruiz & Pavon, Syst. Veg. Fl. Peruv. Chil. 293. 1798. *Ludovia trigona* (Ruiz & Pavon) Pers., Syn. Pl. 2: 576. 1807. *Salmia trigona* (Ruiz & Pavon) Willd., Ges. Naturf. Freunde Berlin Mag. Neuesten Entdeck. Gesammten Naturk. 5: 401. 1811. TYPE: Peru. Huanuco, *Pavon s.n.* [FI, not seen; MA (F negative 29563), destroyed fide Harling, 1958].

Treelet 2–3 m tall. Leaves bifid, thick-coriaceous, very closely plicate with ca. 20 ribs on each side, the blade ca. 30 cm long, 19 cm from apex to apex of midvein, the midvein ca. 12 cm long, the petiole ca. 15 cm long. Inflorescence once branched, the base of peduncle enclosed by a bract and the enlarged prophyll ca. 30 cm long, the tubular sheath thus formed subwoody, 2–3 cm wide, somewhat compressed, persistent, the peduncle 30–40 cm long, mostly enclosed by the prophyll and bract, the central axis well developed, the rachillae strongly ascending, 8–11 cm long, ca. 6–7 mm diam., densely brownish puberulous with mostly branched trichomes between the glabrate grayish lips, the flower pits with single conspicuous, bifid lower lip, spirally arranged in ca. 6 series, adjacent pits separated by 1 mm, the flowers (in bud) about 2 mm long, the stamen filaments linear, fused at base, ca. 1 mm long.

Additional specimens examined. PERU. PASCO: San Gutardo, Oxapampa–Cerro de Pasco road 30–35 km W of Oxapampa, elfin forest and "pajonal," 2,650–

2,800 m, 3 Feb. 1983, *Gentry, Smith, Vasquez & León 40003* (AMAZ, MO, USM).

The plant described above apparently represents the rediscovery two centuries later of a species previously known only from the type collected near Muña, Peru by Ruiz and Pavon and described by them in the wrong family. Rediscovery of this species thus resolves the long-standing mystery of the identity of *Carludovica trigona.*

Carludovica trigona, incompletely described, apparently from a sterile plant (though said to flower in April, May, and June), was for many years associated with the common Cyclanthaceae species now known as *Evodianthus funifer* subsp. *peruviana* Harling, and that species was treated as *Carludovica trigona* in the "Flora of Peru." The type material of *C. trigona* apparently was destroyed while on loan from Madrid to Berlin during World War II. In the process of preparing his monograph of Cyclanthaceae, Harling (1958: 273) examined a leaf from an isotype of *C. trigona* preserved at FI and realized that it belonged to Palmae rather than Cyclanthaceae. However, he did not propose the necessary new combination in *Geonoma.* No *Geonoma* similar to this species is included in the "Flora of Peru" (Macbride, 1960) or in Wessels-Boer's (1968) monograph of *Geonoma,* where it would key out with the very different pinnately compound-leaved Colombian species *G. dicranospadix* Burret. I originally intended to describe the recently collected plant described here as a new species. However, it seems clear from the type photograph that this distinctive palm, with its incredibly thick-coriaceous corrugate leaves, is, in fact, the same as *Carludovica trigona.*

Geonoma trigona turns out to be very characteristic in a very specialized shrubby xeromorphic high altitude vegetation locally called "pajonal." The distinctive "pajonal" vegetation type is characteristic of exposed ridges, mostly between 2,800 and 3,000 m, in the Cordillera Oriental of the Central Peruvian Andes. The "pajonal" interdigitates with "ceja de la montaña" elfin forest and is apparently edaphically limited, a conclusion supported by the extremely coriaceous leaf textures of many of its species. By far the most dramatically coriaceous "pajonal" species is *G. trigona* (Fig. 1C), which may have the thickest and most scleromorphic leaf of any palm in the world. The striking texture of the closely and rigidly plicate leaves of *G. trigona* suggests that it would be of great horticultural interest to palm fanciers, especially since its high altitude habitat indicates that it is probably cold resistant.

Chamaedorea poeppigiana (Mart.) A. Gentry, comb. nov. *Morenia poeppigiana* Mart., Hist. Nat. Palm. 3(7): 161. 1838; Hist. Nat. Palm. 3(9): 309. pl. 140, 141. 1849. *Nunnezharoa poeppigiana* (Mart.) O. Ktze., Revis. Gen. Pl. 2: 730. 1891. TYPE: Peru. Huánuco: Río Chinchao, *Poeppig 1546* [W, not seen (F negatives 29901, 29902)].

Morenia fragrans Ruiz & Pavon, Fl. Peruv. Prodr. 140. pl. 23. 1794; Syst. Veg. Fl. Peruv. Chil. 299. 1798. TYPE: Peru. Huánuco: Muña, *Ruiz & Pavon s.n.* [G, not seen (F negative 25383)], non *Chamaedorea fragrans* (Ruiz & Pavon) Mart., Hist. Nat. Palm. 2(1): 4. pl. 3: figs. 1, 2. 1823 (based on *Nunnezharia fragrans* Ruiz & Pavon). *Nunnezharoa morenia* O. Ktze., Revis. Gen. Pl. 2: 730. 1891 (nom. nov. for *Morenia fragrans* Ruiz & Pavon).

This relatively large *Chamaedorea* species with a 2–7 m tall trunk, is locally fairly common in wet premontane forest between 700 and 1,100 m on the eastern slopes of the Peruvian Andes. It is distinguished from other Peruvian species of the *Morenia* alliance of *Chamaedorea* by its narrowly lanceolate leaf segments. Recent collections have been made in San Martín, Huánuco, and Pasco departments, and Macbride (1960) cited earlier collections from Bolivia and from Amazonas Department, as well as the type from Muña. On the new Carretera Marginal in construction between Villa Rica and Puerto Bermudez, *C. poeppigiana* occurs in premontane rain forest on the same steep foothills of the upper Palcazu drainage as does *Wettinia longipetala.* [km 51–60, Villa Rica-Puerto Bermudez, 700 m, *Gentry & Smith 36000* (MO, USM)]. In San Martín Department it is known as "shucso negro."

I propose this new combination in anticipation of approval of Proposition 458 (Moore, 1979), which has already been unanimously approved by the Committee for Spermatophyta (Taxon 31: 541. 1982). Although *M. fragrans* is the type species of *Morenia* and the oldest basionym available for this plant, transfer of that specific epithet to *Chamaedorea* is precluded by the existence of *Chamaedorea fragrans* (Ruiz & Pavon) Mart., based on *Nunnezharia fragrans* Ruiz & Pavon. Apparently *Morenia poeppigiana* is

conspecific with *M. fragrans* as already suspected by Macbride (1960), and that specific epithet becomes the appropriate one for the species in *Chamaedorea.*

Chamaedorea latisecta (H. Moore) A. Gentry, comb. nov. *Morenia latisecta* H. Moore, Gentes Herb. 8: 203. 1949. TYPE: Colombia. Putumayo: Sibundoy, 2,225–2,300 m, *Schultes & Villareal 7676* (not seen, fide Moore, 1949, fig. 87).

The Peruvian *Chamaedorea poeppigiana* is not the only *Morenia* species for which a new combination is needed in *Chamaedorea.* However, of all the middle elevation species of *Morenia, M. latisecta* may be the only one adequately differentiated from *Chamaedorea montana* (Humb. & Bonpl.) Voss for specific recognition. It is distinguished by its broadly lanceolate leaf segments. If *Morenia* and *Chamaedorea* are merged under the latter name, the above combination is needed. I have refrained from proposing other new combinations in *Chamaedorea* in anticipation that several of approximately ten *Morenia* names apparently accepted by Moore (1979) will prove synonymous with *Chamaedorea montana* (Humb. & Bonpl.) Voss, which has the oldest available basionym and for which the combination in *Chamaedorea* has already been made.

Chamaedorea megaphylla A. Gentry, sp. nov. TYPE: Peru. Huánuco: Provincia Leoncio Prado, La Divisora, Cordillera Azul near border with Ucayali, 1,620–1,760 m, disturbed cloud forest, 75°48′W, 9°5′S, 10 Aug. 1980, *Gentry, Salazar & Horna 29572* (holotype, MO; isotypes, AMAZ, MO, USM).

Arbor dioeca, 5 m alta. Folia 2 m longa, pinnis utrinque plus quam 20, lineari-lanceolatis, pro parte maxima 50–58 cm longis. Inflorescentia feminea paniculata, ramis lateralibus 19–24. Flores feminei calycibus cupularis 2–2.5 mm longis, petalis ovatis, 3–4 mm longis.

Dioecious tree 5 m tall, the trunk ca. 4 cm diam., green, ringed. Leaves 2 m long, pinnate, the rachis triangular in section, acutely so toward apex, with over 20 pairs of opposite or subopposite segments, these averaging a pair every 10 cm except at apex (5 pairs in apical 22 cm), the segments linear-lanceolate, not noticeably sigmoid, 50–58 cm long for most of length, the terminal segments smaller and as little as 20 cm long, mostly 9–10 cm wide (the terminal segments as little as 3 cm wide), somewhat corrugated when fresh, drying gray-green with contrastingly tannish main veins below, mostly with ca. 10 main veins per segment, fewer in narrow apical leaflets, glabrous except for a few minute and very inconspicuous scales on underside. Inflorescence (only female seen) whitish in flower, turning green in fruit, the peduncle 34–36 cm long, semicircular in cross section and 2 cm across at base, bearing 5 chartaceous brownish bracts, these glabrous except for few minute scales, the lowermost attached at base, the second 2–3 cm above base, the third 9–14 cm above base, the fourth ca. 27–28 cm above base (and 8–9 cm below lowermost inflorescence branch), these bracts 3–4 cm wide when flattened, the uppermost bract much smaller and caducous (ca. 3 cm long), 3–4 cm below basal inflorescence branches, the rachis 15–18 cm long, with a well-developed straight central axis and ca. 19–24 lateral branches 9–18 cm long, the flowers not sunken into rachillae, adjacent flowers mostly separated by ca. 5 mm. Female flowers with the calyx lobes fused into a 2–2.5 mm long basal cupule, the ovate acute petals 3–4 mm long, sometimes with a more or less distinct dorsal keel, the thick triangular-patelliform ovary ca. 2 mm long and 3 mm across, the stigma lobes sessile at top of ovary, ca. 1 mm long, erect to horizontal.

This species is apparently endemic to the isolated cloud forest of the upper part of the Cordillera Azul between Tingo Maria and Aguaytia. This area, designated by the Holdridge system as premontane rain forest, is well known for its endemism [e.g., *Syngonium gentryi* Croat, and the frog *Dendrobates silverstonei* (Myers & Daly, 1979)]. The remnant patch of forest in which *C. megaphylla* was discovered has since been cut down and we searched in vain for additional material in 1982.

This species is quite unlike any taxon of *Chamaedorea* (or *Morenia,* which was erroneously differentiated as monoecious and with which it is more closely allied) treated in the "Flora of Peru" (Macbride, 1960) in its generally much larger dimensions. The only Peruvian species whose description approaches that of *C. megaphylla* is *Morenia macrocarpa* Bur., known only from the incompletely described type and a second topotypic collection from a lower altitude (600–700 m) in the Huallaga Valley. From its description, *Morenia macrocarpa,* of which I have seen no authentic material, differs strongly from

M. megaphylla in the linear leaf segments; Macbride (1960) suspected that *M. macrocarpa* might be synonymous with *M. linearis* (Ruiz & Pavon) Bur., which has similarly narrow leaf segments.

While it is clear that this species is new to Peru, it is more difficult to be sure that none of the many species of *Chamaedorea* (and *Morenia*) proposed from elsewhere in Latin America are not conspecific, since most descriptions are very incomplete. The only other species of *Chamaedorea* sensu lato known to me to have leaves as long as the 2 m ones of *C. megaphylla* is a collection from 2,000 m near Baeza, Ecuador [*Balslev & Madsen 10346* (MO)] that I have referred to "*Morenia*" *caudata* Burret, largely because that species was described from near its collection locality, but which is very different from *C. megaphylla* in its much narrower leaflets. Unfortunately leaf length of palms usually cannot be determined from herbarium material and very few of Burret's (1933, 1936) descriptions give leaf dimensions. More important, all of the described South American species of *Chamaedorea* (or *Morenia*) differ from *C. megaphylla* in having leaves with either many fewer segments or the segments much shorter and/or narrower and/or sigmoid, or the terminal segments broader and confluent. From the description, the only remotely similar species of *Chamaedorea* with median leaf segments as broad as those of *C. megaphylla* is *Morenia latisecta* H. Moore of Putumayo, Colombia (see above), but that species differs in shorter (0.3–1.3 m) leaves and the broadly lanceolate shape of its leaf segments.

I have not attempted to account for the plethora of Central American *Chamaedorea* names, but assume on phytogeographical grounds that none is relevant to the Peruvian species since it is quite unlike anything known from geographically intermediate Panama or Costa Rica.

Chamaedorea smithii A. Gentry, sp. nov. TYPE: Peru. Junín: Tarma-Chanchamayo border, Río Tulumayo drainage, Rondayacu, N of Monobamba, 45 km S of San Ramón, Podocarpus forest, 1,800 m (75°25′W, 11°20′S), 15 Oct. 1982, *Foster & Smith 9171* (holotype, MO; isotypes MO(3), USM, to be distributed).

Arbor parva, 2 m alta. Folia ca. 65–75 cm longa, pinnis utrinque 8–9, linearibus vel lanceolato-ellipticis, non sigmoidei, 15–29 cm longis, 1–5 cm latis. Inflorescentia feminea paniculata, pedunculo ca. 30 cm longo, rhachi recta, ramis lateralibus 15–21, fere perpendicularibus. Flores feminei calycibus cupularis 1.5 mm longis, petalis ovatis 1–1.5 mm longis. Fructus globosus, 0.8–1 cm diam.

Slender treelet 2 m tall, the stem green, with prominent rings. Leaves ca. 65–75 cm long, pinnate with 8–9 pairs of alternate or subopposite segments, adjacent segments mostly separated by 3–7 cm, the segments variable in shape, narrowly lanceolate-elliptic to linear, not sigmoid, 15–29 cm long, long acuminate, the lowermost less than 1 cm wide, some of the terminal and middle segments to 5 cm wide, drying grayish green with contrastingly tannish main veins below, mostly with 5–7 main veins, fewer in the narrow basal segments, the "main" veins intergrading into and not very strongly differentiated from the others, more or less minutely lepidote on underside of leaf segments, otherwise glabrous; petiole at least 9–15 cm long below lowermost segments. Inflorescence (only female seen) with peduncle ca. 30 cm long, bearing 4 narrow (ca. 1 mm wide) membranaceous bracts, the lowermost attached near base and ca. 8–9 cm long, the second attached ca. 4 cm above base and ca. 17 cm long, the third attached ca. 13–14 cm above base and ca. 31 cm long, the uppermost ca. 24–25 cm above base (7–9 cm below basal inflorescence branches) and ca. 5–6 cm long, the rachis 10–13 cm long, rather straight, the 15–21 lateral branches 3.5–5 cm long, nearly at right angles with rachis in flower, the flowers not at all sunken into rachillae (the scars actually slightly raised), adjacent flowers mostly separated by several mm. Female flowers with the calyx lobes fused into a cupule ca. 1.5 mm (to 2 mm when in fruit) long, the broadly obovate petals ca. 1–1.5 mm long, folded over bud, the thick triangular-ovoid ovary ca. 1.5 mm long, the 3 stigma lobes sessile at top of ovary, ca. 1 mm long, recurved. Infructescence with the lateral branches to 14 cm long, the fruits globose, turning red at maturity, 0.8–1 cm diam., subtended by the persistent and conspicuous calyx cup.

This species is apparently endemic to the lower montane *Podocarpus* forests of intermediate elevations in the central Peruvian Andes. Although *C. smithii* is locally very common in the remnant *Podocarpus* forest at Rondayacu, this is one of the last vestiges of this vegetation type in Peru. The new species must thus be regarded as a highly threatened one, helping emphasize the

need for an increased focus on conservation of the last remnants of this endangered vegetation type.

Chamaedorea smithii keys out in the "Flora of Peru" to the vicinity of *C. pauciflora* Mart. and *C. boliviensis* Damm. It differs from lowland *C. pauciflora* in non-sigmoid mostly broader leaf segments with more (5–7) main nerves, the branched inflorescence, and smaller (7–8 mm long and wide versus 10 mm long by 7–8 mm wide) fruits. From *C. boliviensis,* another Amazonian lowland species, it differs in much narrower (to 5 cm wide versus a described 7–7.5 cm wide) leaf segments, and the globose fruit. This species is also related to *C. lanceolata* Ruiz & Pavon, a widespread, common, and highly variable species, but differs conspicuously from that species (and its several potential segregates) in having a pyramidal inflorescence with a straight well-developed central rachis and short (less than 5 cm in flower), numerous (15–21) lateral branches.

While a few Central American species (e.g., *C. schippii* Burret of Belize and *C. sartorii* Liebm. of Mexico) have somewhat similar inflorescences, none of these has non-sigmoid leaf segments irregular in width and broad in part. Although I have not been able to check all the Central American species of the genus, no *Chamaedorea* species of southern Central America is at all similar to *C. smithii,* suggesting that it is phytogeographically highly improbable that it could prove conspecific with any of the poorly known Central American taxa not represented at MO.

Literature Cited

Burret, M. 1930. Iriarteae. Notizbl. Bot. Gart. Berlin-Dahlem 10: 918–942.

———. 1933. *Chamaedorea* Willd. und verwandte Palmengattungen. Notizbl. Bot. Gart. Berlin-Dahlem 11: 724–768.

———. 1936. Die Palmengattung *Morenia* R. & P. Notizbl. Bot. Gart. Berlin-Dahlem 13: 332–339.

———. 1940. Neue Arten aus Ecuador III. Palmae. Notizbl. Bot. Gart. Berlin-Dahlem 15: 23–38.

Gentry, A. H. 1980. The flora of Peru: a conspectus. Fieldiana, Bot. n.s. 5: 1–11.

Harling, G. 1958. Monograph of the Cyclanthaceae. Acta Horti Berg. 18: 1–428.

Macbride, J. F. 1960. Palmae. *In* Flora of Peru. Field Mus. Nat. Hist., Bot. Ser. 13: 321–418.

Moore, H. E., Jr. 1979. Proposal to conserve *Chamaedorea* Willd. over *Morenia* Ruiz et Pavon (Palmae). Taxon 27: 555–556.

——— & J. Dransfield. 1978. A new species of *Wettinia* and notes on the genus. Notes Roy. Bot. Gard. Edinburgh 36: 259–267.

Myers, C. W. & J. W. Daly. 1979. A name for the poison frog of Cordillera Azul, eastern Peru, with notes on its biology and skin toxins. Amer. Mus. Novit. 2674: 1–24.

Wessels-Boer, J. G. 1968. The Geonomid palms. Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Ser. 3, 58: 1–202.